

Patent Claims

1. Method for taking up a first medium, which is present in a first phase, into a capillary device,

- in which the first medium is taken up into the capillary device by means of a reduced pressure which is produced in the latter,

- wherein the reduced pressure which is produced is controlled in such a way that it is less than a critical pressure such that, if it is exerted in the capillary device, a surface tension which is produced by the first medium or a second medium in the capillary device, when the first medium has been taken up fully by the capillary device, would be overcome so that the second medium which is present in a second phase which is different from the first phase, would be taken up into the capillary device.

2. Method according to Claim 1, in which a pipette is used as the capillary device.

3. Method according to Claim 1 or 2, in which the critical pressure in the capillary device is determined according to the following rule:

$$P = 2 \cdot \frac{S}{r},$$

where

- S denotes the surface tension which is produced by the first medium in the capillary device when the first medium has been taken up fully by the capillary device,

- r denotes the radius of a capillary device with a circular base.

4. Method according to one of Claims 1 to 3, in which a liquid is used as the first medium and a gas is used as the second medium.

5. Method according to one of Claims 1 to 3, in which a gas is used as the first medium and a liquid is used as the second medium.

6. Arrangement for taking up a first medium, which is present in a first phase, into a capillary device, having

- 5 - the capillary device for taking up the first medium,
- a pump, coupled to the capillary device, for producing a reduced pressure in the capillary device,
- a pump controller for controlling the reduced pressure produced in the capillary device,
- 10 - in which the pump controller is designed in such a way that the reduced pressure which is produced is controlled in such a way that it is less than a critical pressure such that, if it is exerted in the capillary device, a surface tension which is produced by the first medium or by a second medium in the capillary device, when the first medium has been taken up fully by the capillary device, would be
- 15 overcome so that a second medium which is present in a second phase which is different from the first phase, would be taken up into the capillary device.

7. Arrangement according to Claim 6, having an analysis chip for analysing the first medium taken up into the capillary device.

8. Arrangement according to Claim 7, in which the surface of at least a part of
20 the analysis chips, which surface comes into contact with the first medium, has biological material for binding the molecules contained in the first medium.

9. Arrangement according to one of Claims 6 to 8, in which the capillary device is a pipette.

10. Arrangement according to one of Claims 6 to 9, in which the pump controller is designed in such a way that the critical pressure in the capillary device is determined according to the following rule:

$$P = 2 \cdot \frac{S}{r},$$

5 where

- S denotes the surface tension which is produced by the first medium in the capillary device when the first medium has been taken up fully by the capillary device,
- r denotes the radius of a capillary device with a circular base.

11. Arrangement according to one of Claims 6 to 10, in which the first medium
10 is a liquid and the second medium is a gas.

12. Arrangement according to one of Claims 6 to 10, in which the first medium is a gas and the second medium is a liquid.

13. Arrangement according to one of Claims 6 to 12, in which the capillary device is a porous plate having a plurality of channels, the reduced pressure being in
15 each case produced in one channel.